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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,445	01/26/2001	Dhananjay A. Gore	530.38358X00	3779

20457 7590 09/17/2003

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EXAMINER
JACKSON, BLAINE J

ART UNIT	PAPER NUMBER
2685	4

DATE MAILED: 09/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/769,445	GORE ET AL.	
	Examiner	Art Unit	
	Blane J Jackson	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-26 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 22 and 23 are objected to because the claim dependency appears improper. These claims were treated to read "A transmitter according to claim 21". Appropriate correction is required.

2. Claims 18, 19 and 20 are objected to because the claim dependency appears improper. These claims were treated to read "A receiver according to claim 17". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-5, 7, 8, 13, 15, 16, 21 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Sandhu et al. (U.S. Patent 6,438,389).

As to claim 1, Sandhu teaches the selection of an optimal set of antennas from a plurality of antennas for use by a transmitter and/ or receiver having a plurality of RF

chains to transmit and/or receive a wireless signal on a wireless link or network (figures 1 and 7, column 4, lines 50-67) including determining information concerning transmission of wireless signals on the wireless link (column 5, lines 6-24), selecting an optimal set of antennas from the plurality of antennas based on the information (column 5, line 64 to column 6, line 6), connecting the RF chains to the optimal set of antennas to permit transmission or reception of the wireless signal on the wireless link via the optimal set of antennas (reception: figures 1 and 5, column 5, lines 24-40 and transmission: figure 5, column 8, line 15-33) and the RF chains correspond in number to the number of antennas in the optimal set of antennas and the number of antennas included in the plurality of antennas is greater than the number of RF chains (figures 5-7, column 7, lines 47-64 and antennas and optimal set of antennas: column 4, lines 50-58).

As to claim 2, Sandhu discloses the information is used to optimize the wireless link according to criterion including any one of capacity, diversity, spatial multiplexing and any other criterion for which the wireless link is to be optimized (column 5, lines 6-20 and line 64 to column 6, line 6).

As to claims 3 and 4, Sandhu teaches a wireless base station, a transceiver that also houses a signal quality measurement and control system (figure 7, (24), (30), (44), (46) and (34)).

As to claims 5 and 21, Sandhu teaches a transmitter including a plurality of antennas, a plurality of RF chains, each RF chain transmits a wireless signal on a wireless link to a receiver via one of the plurality of antennas (figures 6 and 7, column 8, lines 15-23), an antenna selection apparatus which selects an optimal set of antennas from the plurality of antennas for use by the RF chains to transmit the wireless signal on the wireless link (column 4 lines 50-66 and column 5, line 64 to column 6, line 6), where the antenna selection apparatus *determines* (figures 6 and 7, column 8 lines 15-33) information concerning transmission of wireless signals on the wireless link, selects an optimal set of antennas from the plurality of antennas based on the information and connects the RF chains to the optimal set of antennas to permit transmission of the wireless signal from the RF chains on the wireless link via the optimal set of antennas (figure 7). Sandhu discloses the RF chains correspond in number to the number of antennas in the optimal set of antennas (select any optimal number of selector switch and associated RF chain column 7, line 48-64).

Sandhu further teaches the RF chains correspond to a number at least equal to a highest possible optimal number of antennas to be determined based on the information (select any optimal number of selector switch and associated RF chain column 7, line 48-64) and the number of antennas included in the plurality of antennas included in the plurality of antennas is greater than the number of RF chains (beam forming or pattern selection from a single or plurality of antennas: column 4, lines 50-60).

As to claim 7, Sandhu discloses the information is used to optimize the wireless link according to criterion including any one of capacity, diversity, spatial multiplexing and any other criterion for which the wireless link is to be optimized (column 5, lines 6-20 and line 64 to column 6, line 6).

As to claim 8, Sandhu teaches a wireless base station, a transceiver that also houses a signal quality measurement and control system (figure 7, (24), (30), (44), (46) and (34)).

As to claim 13, Sandhu teaches a receiver including a plurality of antennas, a plurality of receive radio frequency (RF) chains, each receive RF chain receives a wireless signal on a wireless link from a transmitter via one of the plurality of antennas (figures 1, 6 and 7, column 4, line 50 to column 5, line 5), an antenna selection apparatus which selects an optimal set of antennas from the plurality of antennas for use by the receive RF chains to receive the wireless signal on the wireless link (column 5 lines 21-29), where the antenna selection apparatus *determines* (figures 1, 6 and 7 and column 5, line 64 to column 6, line 6) information concerning transmission of wireless signals on the wireless link, selects an optimal set of antennas from the plurality of antennas based on the information and connects the receive RF chains to the optimal set of antennas to permit receipt of the wireless signal from the receive RF chains on the wireless link via the optimal set of antennas (figures 1 and 7). Sandhu further teaches the receive RF chains correspond in number to the number of antennas

in the optimal set of antennas (select any optimal number of selector switch and associated RF chain column 7, line 48-64) and the number of antennas included in the plurality of antennas is greater than the number of RF chains (beam forming or pattern selection from a single or plurality of antennas: column 4, lines 50-60).

As to claim 15, Sandhu discloses the information is used to optimize the wireless link according to criterion including any one of capacity, diversity, spatial multiplexing and any other criterion for which the wireless link is to be optimized (column 5, lines 6-20 and line 64 to column 6, line 6).

As to claim 16, Sandhu teaches a wireless base station, a transceiver that also houses a signal quality measurement and control system (figure 7, (24), (30), (44), (46) and (34)).

As to claim 23, Sandhu discloses the information is used to optimize the wireless link according to criterion including any one of capacity, diversity, spatial multiplexing and any other criterion for which the wireless link is to be optimized (column 5, lines 6-20 and line 64 to column 6, line 6).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9, 11, 12, 17, 19, 20, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu with a view to Yun et al. (U.S. Patent 6,600,934).

As to claims 9, 12 and 24, Sandhu teaches a transmitter including a plurality of antennas, a plurality of RF chains, each RF chain transmits a wireless signal on a wireless link to a receiver via one of the plurality of antennas (figures 6 and 7, column 8, lines 15-23), an antenna selection apparatus which selects an optimal set of antennas from the plurality of antennas for use by the RF chains to transmit the wireless signal on the wireless link (column 4 lines 50-66 and column 5, line 64 to column 6, line 6), where the antenna selection apparatus ***determines*** (figure 7, column 8 lines 15-33) information concerning transmission of wireless signals on the wireless link, selects an optimal set of antennas from the plurality of antennas based on the information and connects the RF chains to the optimal set of antennas to permit transmission of the wireless signal from the RF chains on the wireless link via the optimal set of antennas (figure 7). Sandhu discloses the RF chains correspond in number to the number of antennas in the optimal set of antennas (select any optimal number of selector switch and associated RF chain column 7, line 48-64).

Sandhu further the RF chains correspond to a number at least equal to a highest possible optimal number of antennas to be determined based on the information (select any optimal number of selector switch and associated RF chain column 7, line 48-64) and the number of antennas included in the plurality of antennas included in the plurality

of antennas is greater than the number of RF chains (beam forming or pattern selection from a single or plurality of antennas: column 4, lines 50-60).

Sandhu does not teach the antenna selection apparatus ***receives*** information concerning transmission of wireless signals on the wireless link and selects an optimal set of antennas from the plurality of antennas based on the information.

Yun teaches a method for a base station to select a transmission antenna (diversity) corresponding to an antenna selection signal message received from a subscriber unit (column 4, lines 2-6 and lines 37-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Sandhu with the subscriber supplied signal quality message supplied by the subscriber unit of Yun such that the subscriber unit can directly ascertain the signal quality of a downlink signal for efficient use of forward code resources and transmit power.

As to claim 11, Sandhu discloses the information is used to optimize the wireless link according to criterion including any one of capacity, diversity, spatial multiplexing and any other criterion for which the wireless link is to be optimized (column 5, lines 6-20 and line 64 to column 6, line 6).

As to claim 26, Sandhu discloses the information is used to optimize the wireless link according to criterion including any one of capacity, diversity, spatial multiplexing and any other criterion for which the wireless link is to be optimized (column 5, lines 6-20 and line 64 to column 6, line 6).

As to claims 17 and 20, Sandhu teaches a receiver including a plurality of antennas, a plurality of receive radio frequency (RF) chains, each receive RF chain receives a wireless signal on a wireless link from a transmitter via one of the plurality of antennas (figures 1, 6 and 7, column 4, line 50 to column 5, line 5), an antenna selection apparatus which selects an optimal set of antennas from the plurality of antennas for use by the receive RF chains to receive the wireless signal on the wireless link (column 5 lines 21-29), where the antenna selection apparatus *determines* (figures 1, 6 and 7 and column 5, line 64 to column 6, line 6) information concerning transmission of wireless signals on the wireless link, selects an optimal set of antennas from the plurality of antennas based on the information and connects the receive RF chains to the optimal set of antennas to permit receipt of the wireless signal from the receive RF chains on the wireless link via the optimal set of antennas (figures 1 and 7). Sandhu further teaches the receive RF chains correspond in number to the number of antennas in the optimal set of antennas (select any optimal number of selector switch and associated RF chain column 7, line 48-64) and the number of antennas included in the plurality of antennas is greater than the number of RF chains (beam forming or pattern selection from a single or plurality of antennas: column 4, lines 50-60). Sandhu does not teach where the antenna selection apparatus ***receives*** information concerning transmission of wireless signals on the wireless link and selects an optimal set of antennas from the plurality of antennas based on the information.

Yun teaches a method for a base station to select a transmission antenna (diversity) corresponding to an antenna selection signal message received from a subscriber unit (column 4, lines 2-6 and lines 37-55). It follows an antenna selected for quality communications in the downlink or uplink would be the most effective antenna for the respective reverse path. This point is also made Sandhu (column 8, lines 15-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Sandhu with the subscriber supplied signal quality message supplied by the subscriber unit of Yun such that the subscriber unit can directly ascertain the signal quality of a downlink signal for efficient use of forward code resources and transmit power.

As to claim 19, Sandhu discloses the information is used to optimize the wireless link according to criterion including any one of capacity, diversity, spatial multiplexing and any other criterion for which the wireless link is to be optimized (column 5, lines 6-20 and line 64 to column 6, line 6).

6. Claims 6, 10, 14, 18, 22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. (U.S. Patent 6,438,389) with a view to Krile (U.S. Patent 6,229,486).

As to claims 6,10, 14, 18, 22 and 25, Sandhu teaches a wireless transceiver station that monitors signal quality to determine the management of a plurality of transmission and receive antennas for best signal quality in communication with a

transceiver subscriber unit but does not teach the transceiver subscriber unit includes a plurality of antennas (figure 7, column 1, lines 14-19).

Krile teaches a transceiver subscriber unit with a plurality of antennas with a control system to monitor the signal quality and intelligently select the optimum antenna beam pattern configuration (figure 1, column 3, lines 16-41). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the transceiver subscriber unit of Sandhu with the transceiver subscriber unit of Krile to also select to obtain an optimal antenna configuration for best signal quality.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Skold (U.S. Patent 6,574,461) teaches a radio receiver with selected multiple antenna for the most favourable signal quality. Matusevich et al. (U.S. Patent 6,535,733) teaches a measurement radio system to scan active channels of a base station a produce operating information for the traffic radios servicing the active channels to switch between different sets of antennas. Shen et al. (U.S. Patent 6,483,884) teaches a system for selecting an antenna for the clearest signal quality from a diversity of antennas in a wireless communication system. Pallonen (U.S. Patent 6,408,169) teaches a method for selecting an antenna beam of a base station of a radio station with forwarding of a signal between base stations to connect the mobile station to the base station controller. Jager (U.S. Patent 6,330,433) describes the selection for subsequent use of an antenna from a plurality antennas for best signal quality.

Hagerman et al. (U.S. Patent 6,301,238) teaches a directional beam generative apparatus and an associated method for a radio communication station to form directional antenna beam patterns for the communication of communication signals with remote stations operable in a TDMA system. Lee (U.S. Patent 6,198,925) teaches a controller coupled to a scanner and the serving transceiver to monitor mobile communications used to select an antenna or a combination of antennae for communications with optional beam forming techniques. Ward et al. (U.S. Patent 6,167,286) discloses a base transceiver station operating a sectorized cell of a cellular radio system that selects from a plurality of narrow uplink main receive beams and one or a plurality of uplink diversity received beams for the best signal to noise ratio.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

BJJ

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